**Lincoln Index** {Aka Capture, Mark, Release and Recapture}

A population is sampled in an area. Organisms are collected and marked in a way that does not harm the organism or impede its movement. Once they are caught and marked they are released back into their original population. Later, the population is sampled again. The organisms that are already marked are counted.

*Assumptions Made When Performing Lincoln Index:*

1. *Mixing of the population must be complete (marked organisms spread throughout the population)*
2. *The marks don’t disappear*
3. *Marks can’t be harmful or increase predation (by making the individual more easy to catch or see)*
4. *It is equally easy to catch all organisms of the population*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bean Population #1 | |  | Bean Population #2 | |
| n1 |  | n1 |  |
| n2 |  | n2 |  |
| m2 |  | m2 |  |
| N |  | N |  |
| N= (n1 x n2)  m2 |  | N= (n1 x n2)  m2 |  |

1. *There is no immigration, emigration, births or deaths in the population between the times of sampling.*

Determine the population size of the beans using the Lincoln Index

n1 = number of animals first marked and released

n2 = number of animals captured in the second sample

m2 = number of marked animals in the second sample

N = total population

Now do these practice problems,

1. A total of 303 were marked. 24 hours later, the organisms were collected again in the same place. This time 297 were collected, 99 of which were already marked. What is the estimated population of this organism?
2. 100 organisms were caught in a portion of a pond. They were marked with paint on the underside of the shell and released. One week later, a second sample of 100 was captured. 25 were already marked. What is the estimated population of this organism?